

Remarks

Matters Pertaining to the Specification

Paragraph 0014 (page 5) and paragraph 0015 (pages 5-6) have been amended to correct character references to the drawing figure. These changes have been made to correct errors that were noted by the Examiner. It is believed that the grounds of the Examiner's objection to the disclosure have been corrected and removed.

Matters Pertaining to the Claims

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kammermeier et al. (6,116,825) in view of Jamison's publication entitled "New Developments in Microporous Polymer Lubricants" dated May 1985. Claims 1-3 and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kammermeier et al in view of Jamison (5,435,925). It is respectfully requested that these rejections of the claims in the application be reconsidered and removed in view of the following remarks.

Applicant's claims 1-8 recite a cutting tool (such as a drill, claim 5) for rotational cutting engagement under pressure with a workpiece surface. The cutting tool has a rod shaped body with at least one hole along the length of the body. The hole(s) contain an oil filled polymer lubricant at the cutting surface. The oil filled lubricant releases oil at the cutting surface in the operation of the tool. Claims 2 and 7 recite that a volume of the oil filled polymer is filled in the hole before a use of the cutting tool and that the fill volume is the sole source of lubricant at the cutting surface as the tool is operated. Claims 3 and 5 recite that the hole extends in a helical path which facilitates movement of the oil under centrifugal force. The helical path also allows for more lubricant to be stored in the tool. Claims 4 and 8 specify that the lubricant comprises a micro porous polyethylene matrix containing a lubricating oil and that the oil makes up more than 50% by weight of the lubricant in the tool.

An important feature of the claimed invention is that an individual cutting tool can be prepared with a passage containing the oil filled polymer lubricant and used as-is in a cutting machine without modifying the machine to deliver a lubricant to the cutting tool. The prior art does not teach or suggest such a cutting tool.

The Kammermeier et al '825 Patent (hereafter Kammermeier, for brevity) discloses a rotary cutting tool with a coolant passage and a dispenser for supplying a cooling and lubricating fluid to the coolant passage. Kammermeier relies on a reservoir to hold lubricant for the cutting

tool. And this reliance requires modifications to the machine, or to the toolholder, or the tool. The claimed invention does not operate like the Kammermeier disclosure or make use of it.

Kammermeier states that the lubricant may be solid or highly viscous at room temperature so that it will not leak when the tool is not in use. But the lubricant is to liquefy at the operating temperature of the tool for adequate flow from the dispenser through the tool and out the discharge openings when the tool is at work. The Examiner acknowledges that Kammermeier does not disclose a tool as recited in claims 1-8.

The examiner points to column 12 of Kammermeier as showing other lubricants that might be used in his invention. But none of these Kammermeier alternatives suggest the oil-filled polymer containing tools recited in Applicant's claims.

At column 12, lines 52-61, Kammermeier identifies eight patents that describe lubricants for use in his drill. U.S. 5,378,379 discloses an aqueous based lubricant and surface conditioner for aluminum cans. U.S. 5,388,631 uses fine particles of boron, graphite, molybdenum disulfide, mica, or talc dispersed in water or alcohol as a lubricating spray for die casting apparatus. U.S. 5,399,274 discloses a lubricant for metal working or forming where the fatty acid and organic phosphate containing lubricant is dispersed or dissolved in a liquid medium and coated on the part. U.S. 5,415,791 discloses solid and liquid lubricant mixtures that can be embedded in apertures or grooves of a metal substrate for sliding applications. U.S. 5,417,869 discloses soaps of carboxylic acids as bioresistant surfactants for cutting oil compositions. U.S. 5,419,413 discloses a tool holder with a pump and conduit for delivering oil to a cutting tool. U.S. 5,427,698 discloses a lubricant coating containing a solid lubricant dispersed in a resin for sliding parts like differential gears, clutch discs, or pulleys. The solid lubricant is a material such as polytetrafluoroethylene, boron nitride, or molybdenum disulfide. And U.S. 5,477,934 discloses a rotary cutter that accommodates the thermal expansion of lubricating grease.

As the Examiner realizes, none of these patents teach or suggest a cutting tool with a lengthwise hole filled with an oil-filled polymer as recited in claims 1-8. So the Examiner turns to the Jamison patent and article.

Applicant's specification identifies the Jamison patent, U.S. 5,435,925, as describing oil-filled polymer lubrication materials suitable for use in the cutting tools of claims 1-8. But while Applicant has recognized the utility of an oil-filled polymer in lengthwise holes of a cutting tool, this concept is not suggested by Jamison or Kammermeier or any other prior art of which Applicant is aware. There is no disclosure in any of the Jamison patent, the Jamison

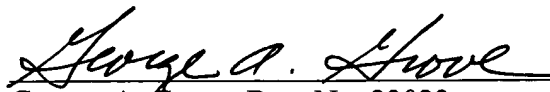
publication or Kammermeier that suggests that they can be combined in a proper rejection of Applicant's claims 1-8.

The Jamison '925 patent discloses polyethylene-lubricant compositions that are moldable into lubricant dispensing plastics that retain suitable tribological properties after molding. The patent does not mention cutting, drilling, or tools. While the patent provides a full disclosure of suitable polyethylene compositions, bleed control agents, and oils, the disclosure suggests no application for the molded material in a drill. The combination of Jamison with Kammermeier is not justified by any teaching within their texts. Only Applicant has seen the use of an oil-filled polymer in a drill, and Applicant's insight is not a suitable basis for rejection of claims 1-8.

The Jamison publication of May 1985 in Lubrication Engineering does not teach the use of his oil-filled polyethylene in drills either. Lubricant applications contemplated by Jamison include molded sliding contacts on machines such as slippers, bushings, packings and wire cores. There is no indication that Jamison had any concept of using oil-filled polymers in passages of cutting tools leading to a cutting surface.

The Examiner is respectfully requested to reconsider all rejections of claims 1-8, and to allow these claims and to pass the case to issue.

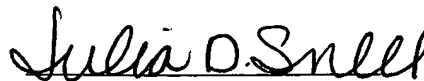
Respectfully Submitted,



George A. Grove, Reg. No. 23023
Reising, Ethington, Barnes, Kisselle, P.C.
P.O. Box 4390
Troy, Michigan 48099-4390
248-689-3500

CERTIFICATE OF MAILING

I hereby certify that this correspondence is, on the date shown below, being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on: 7/25/05.



Julia D. Snell
Assistant to George A. Grove